# Earth and Environmental Sciences - Graduate

## **Programs**

## DOCTORAL DEGREE

- Earth and Environmental Sciences PhD (BS Entry) (https://catalog.uta.edu/science/earth/graduate/ees-phd/)
- Earth and Environmental Sciences PhD (MS Entry) (https://catalog.uta.edu/science/earth/graduate/ees-ms-to-phd/)

#### **MASTER'S DEGREES**

- Master of Science in Earth and Environmental Science (Energy Geoscience Professional) (https://catalog.uta.edu/science/earth/graduate/eesenergy-geoscience-professional-ms/)
- Master of Science in Earth and Environmental Science (Environmental Professional) (https://catalog.uta.edu/science/earth/graduate/eesprofessional-ms/)
- Master of Science in Earth and Environmental Science (Environmental Science) (https://catalog.uta.edu/science/earth/graduate/ees-environmentalscience-ms/)
- Master of Science in Earth and Environmental Science (Geoscience Professional) (https://catalog.uta.edu/science/earth/graduate/ees-geosciencems/)

# Earth and Environmental Sciences Master's Program Admissions

For unconditional admission a student must meet the following requirements:

For the Environmental Science Options: A B.S. degree in biology, chemistry, geoscience, mathematics, or engineering with the following courses or their equivalent: 1 semester of introductory physics for science majors; 2 semesters of introductory chemistry for science majors; and Calculus I and II. Students with a Bachelor's Degree in other sciences will also be considered, subject to satisfactory completion of deficiency courses.

For the Geoscience Options: A B.S. degree in an Earth Science discipline with the following courses or their equivalent: Mineralogy, Petrology, Structure, Stratigraphy/sedimentology, Field Geology and Geophysics or Paleontology. In addition, one semester of Biology, Calculus I and II, and a year of Chemistry and Physics is required.

#### For all Options:

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- 1. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School.
- 2. Graduate Record Examination (GRE) scores are used in conjunction with GPA's. For example a person with a GPA below 3.0 will need a GRE score better than average. Masters students who have succeeded in the Earth and Environmental Science's Program typically score higher than the 60th Percentile on the verbal and quantitative portion of the GRE.
- 3. An applicant whose native language is not English must submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section. However, an applicant whose native language is not English with a bachelor's or a master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL, TOEFL iBT, TSE or IELTS score for admission purposes.
- 4. Favorable letters of recommendation from people familiar with the applicant's academic work.

## **Master's Degree Requirements**

### EARTH AND ENVIRONMENTAL SCIENCES MASTER'S DEGREE

There are additional requirements for all Master's programs listed in this CATALOG under University Requirements and Policies.

#### **Environmental Science Thesis Option**

	Jore Courses			
C	General core courses			
	EVSE 5303	SUSTAINABILITY ISSUES SEMINAR III		
	EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS		
ŝ	Select one of the following engineering courses			
	CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS		
	CE 5319	PHYSICAL-CHEMICAL PROCESSES II		
	or CE 5328	FUNDAMENTALS OF AIR POLLUTION		

Select one of the following science courses

EVSE 5309	ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS <sup>1</sup>		
EVSE 5310	ENVIRONMENTAL SYSTEMS-CHEMICAL ASPECTS <sup>1</sup>		
EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS <sup>1</sup>		
Select one of the following in City,	or Regional Planning:	3	
PLAN 5342	ENVIRONMENTAL POLICY		
PLAN 5343	FOUNDATIONS OF ENVIRONMENTAL POLICY		
PLAN 5351	TECHNIQUES OF ENVIRONMENTAL ASSESSMENT		
Electives within one of the following departments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering, 6 or Urban and Public Affairs			
Two semesters of GEOL 5199 or EVSE 5199 - Seminar 2			

Total Hours			
1			

THESIS

Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

#### **Environmental Science Non-Thesis Option**

Core Courses		
General core courses		7
EVSE 5303	SUSTAINABILITY ISSUES SEMINAR III	
EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
Select one of the following engine	ering courses	3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
CE 5319	PHYSICAL-CHEMICAL PROCESSES II	
or CE 5328	FUNDAMENTALS OF AIR POLLUTION	
Select one of the following in scien	nce:	3
EVSE 5309	ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS 1	
EVSE 5313	ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS <sup>1</sup>	
EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS 1	
Select one of the following in City	and Regional Planning	3
PLAN 5305	LAND USE, MANAGEMENT AND DEVELOPMENT	
PLAN 5316	LAND USE PLANNING AND THE LAW	
PLAN 5352	ENVIRONMENT ASSESSMENT POLICY & PRACTICE	
Electives within one of the following or Urban and Public Affairs	Jepartments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering,	9
EVSE Seminar		2
Two semesters of GEOL 5199 or	EVSE 5199	
EVSE 5395	MASTER'S PROJECT	3
Successful completion of the Master'	s Comprehensive Examination in the final semester	
Total Hours		30

<sup>1</sup> Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

<sup>2</sup> Must include at least 6 hours in department(s) outside that in which the first 9 hours of electives are taken.

#### **The Geoscience Thesis Option**

core courses	Core	Courses
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EVSE 5698

GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Select one of the following in engineering (or advisor approved):		
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
IE 5304	ADVANCED ENGINEERING ECONOMY	

take two hours in the following seminar:

6

30

Total Hours		30
GEOL 5698	THESIS	6
Advisor Approved Electives		15
GEOL 5199	TECHNICAL SESSIONS	

## **The Geoscience Non-Thesis Option**

Total Hours		30
GEOL 5395	MASTER'S PROJECT	3
Advisor Approved Electives		18
GEOL 5199	TECHNICAL SESSIONS	
take two hours in the following	ng seminar:	2
IE 5304	ADVANCED ENGINEERING ECONOMY	
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
Select one of the following in	n engineering (or advisor approved):	3
GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Core Courses		

#### **Environmental Science Professional Option**

Foundations		
EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Select one of the following engineering	ng courses	3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
IE 5304	ADVANCED ENGINEERING ECONOMY	
For science, select any 5000-level E	VSE or GEOL course except 5000-level EVSE or GEOL research credits	3
For City and Regional Planning select	t any 5000-level PLAN course	3
Specialization		
EVSE 5120	ENVIRONMENTAL PROFESSIONAL MENTORING & BUSINESS ETHICS	1
EVSE 5199	SEMINAR IN ENVIRONMENTAL & EARTH SCIENCES	1
EVSE 5115	PROFESSIONAL EXPERIENCE	1
or EVSE 6197	RESEARCH IN ENVIRONMENTAL & EARTH SCIENCES	
Electives		
Select 11 hours from one of the follow Engineering, or Urban and Public Aff	wing departments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental airs	11
EVSE 5395	MASTER'S PROJECT	3
Successful completion of the Master	s Comprehensive Examination in final semester.	
Total Hours		30

Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

## **Energy Geoscience Professional Option**

Foundations				
GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4		
GEOL 5351	SUSTAINABLE ENERGY RESOURCES	3		
GEOL 5190	GEOSCIENCE INTERNSHIP	1		
or GEOL 5199	TECHNICAL SESSIONS			
IE 5304	ADVANCED ENGINEERING ECONOMY	3		
Specialization				
Select 13 hours from one of the following departments: Biology, Chemistry, Earth and Environmental Sciences, or Civil and Environmental 13 Engineering				
Select thesis or non-thesis option 6				
Non-thesis option				

Total Hours		30
GEOL 5698	THESIS	
Thesis option		
GEOL 5395	MASTER'S PROJECT	
Select an additional advisor-appro	oved course	

# Dual Degree Program

Dual master's degrees can be arranged with any suitable program. By participating in a dual degree program, students may apply 6-18 total semester credit hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from six to 18, subject to the approval of Graduate Advisors from both programs. Degree plans, thesis or professional report proposals and programs of work must be approved by Graduate Advisors from both programs. The successful candidate will be awarded both degrees rather than one joint degree.

To participate in the dual degree program, students must make separate application to each program and must submit a separate program of work for each degree. Those interested in the dual degree program should consult the appropriate Graduate Advisors for further information on course requirements. See also the statement on Dual Degree Programs in the general information section of this catalog.

Arrangements to offer a dual degree have already been made between Earth and Environmental Sciences and the Program in City and Regional Planning (M.C.R.P. degree), School of Urban and Public Affairs.

## Admission Requirements

For unconditional admission a student must meet the following requirements:

- 1. A masters segree or at least 30 hours of graduate coursework in environmental science, biology, chemistry, geology, mathematics or engineering.
- 2. A strong quantitative background including courses in differential and integral calculus (i.e., Calculus I and II). Students that have not taken these courses will be expected to complete them during their first year of residence.
- 3. A minimum graduate coursework GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School.
- 4. Graduate Record Examination (GRE) scores are considered in admission decisions. Doctoral students who have succeeded in the Earth and Environmental Sciences Program typically score higher than the 60th percentile the verbal and the quantitative portion of the GRE.
- 5. For applicants whose native language is not English and have not completed a Bachelors degree at a US institution, they must meet the following minimums: TOEFL iBT (minimum 81 overall, with sectional scores of at least 22 writing, 23 speaking, 20 reading, or 16 listening) or IELTS (minimum overall band of 6.5, with a speaking score of 7.0).
- 6. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.
- 7. A statement must be submitted to the program detailing the applicant's specific research interests and identifying the faculty member who is requested as supervisor of the dissertation research.
- 8. Students may be considered for unconditional admission if further review of their transcripts, recommendation letters, correspondence or direct interactions with Earth and Environmental Sciences faculty, and statement of research interests indicates that they are qualified to enter the doctoral program.

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## **Doctoral Degree Requirements**

#### EARTH AND ENVIRONMENTAL SCIENCES DOCTORAL DEGREE

#### Foundations

EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4			
elect one of the following engineering courses					
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS				
CE 5319	PHYSICAL-CHEMICAL PROCESSES II				
or CE 5328	FUNDAMENTALS OF AIR POLLUTION				
Select 3 hours in EVSE or GEOL	at the 5000 level	3			
Select 3 hours in PLAN at the 50	000 level	3			
Select two semesters of:		2			
EVSE 5199	SEMINAR IN ENVIRONMENTAL & EARTH SCIENCES				
or GEOL 5199	TECHNICAL SESSIONS				
Select 6 hours in EVSE, GEOL,	elect 6 hours in EVSE, GEOL, CE, PLAN, or BIOL at the 5000/6000 level 6				
Dissertation	issertation				

Total Hours		30
EVSE 7399	DOCTORAL DEGREE COMPLETION	
EVSE 6999	DISSERTATION	
EVSE 6699	DISSERTATION	
EVSE 6399	DISSERTATION	
Select at least 9 hours from:		9

#### **Total Hours**

Students who enter with a master's degree in a science or engineering field, or with 30 semester hours of graduate coursework, take a diagnostic examination in the first year of residence to evaluate this previous work. Students take their comprehensive exam in the third year of residence. Dissertation hours and doctoral degree completion course are taken after passing the comprehensive exam. The student's supervising committee must approve all courses taken to meet degree requirements.

Students may choose among any of the five participating units for their primary and secondary areas of emphasis. Course selection within these areas of emphasis is guided by the student's supervising committee and must result in a cohesive program that supports the dissertation research.